

Lesson 3 . Controlling 3 LEDs by a Button

Introduction

In this lesson, we will learn how to program your Raspberry Pi to Controlling 3 LEDs by a Button.

Experimental Conditions

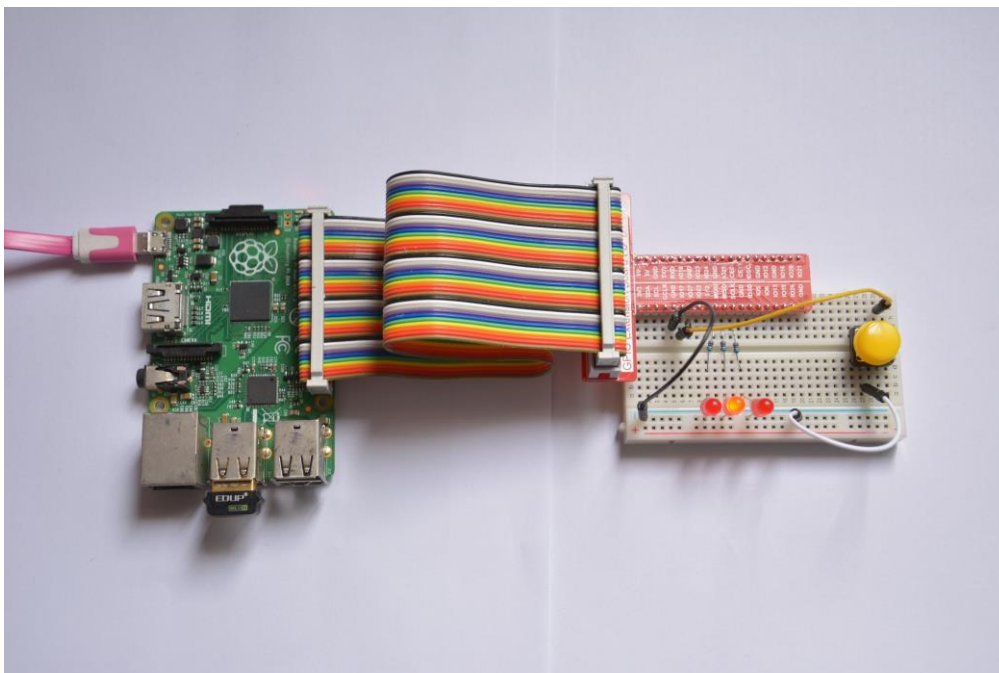
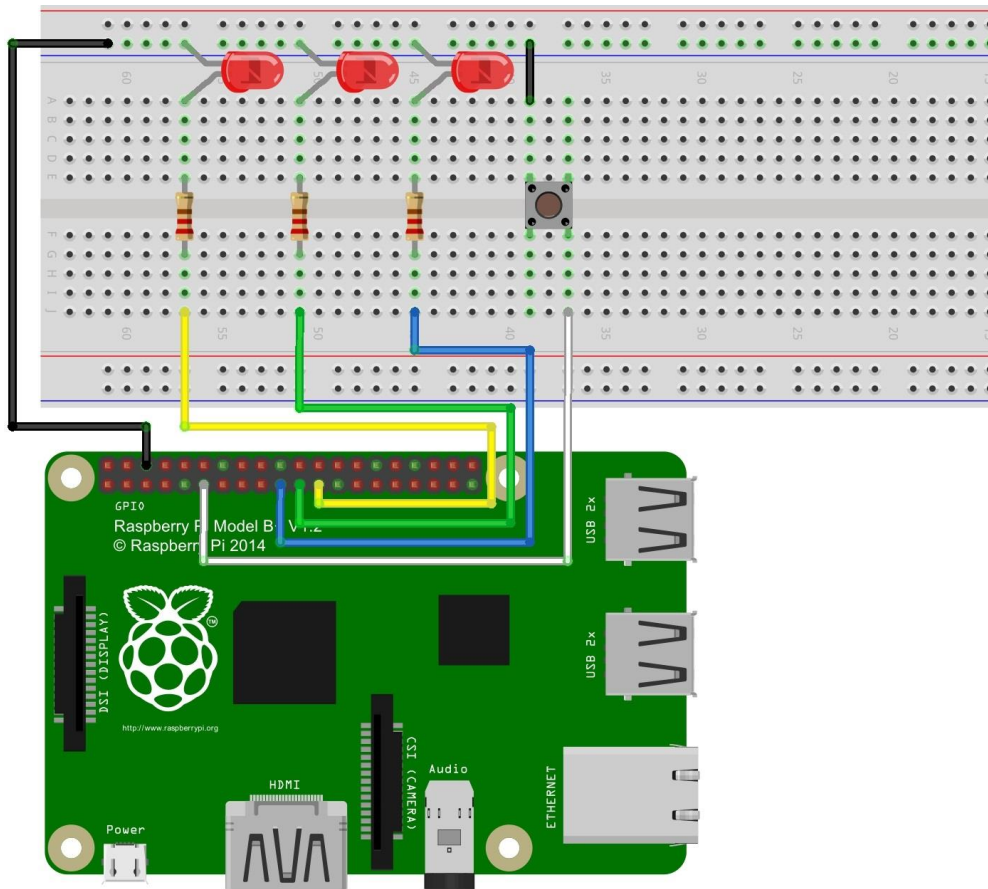
- 1*Raspberry Pi
- 1*Breadboard
- 1*Network cable (or USB wireless network adapter)
- 1*GPIO Extension Board For B+(with connecting lines)
- 3*LED
- 1*Button
- 3*Resistor (220Ω)
- Jumper wires

wiringPi - Raspberry Pi GPIO:

BCM	wPi	Name	Mode	V	- B Plus Physical		V	Mode	Name	wPi	BCM
		3.3v			1	2			5v		
2	8	SDA.1	ALTO	1	3	4			5V		
3	9	SCL.1	ALTO	1	5	6			0v		
4	7	GPIO. 7	IN	1	7	8	0	ALTO	TxD	15	14
		0v			9	10	1	ALTO	RxD	16	15
17	0	GPIO. 0	IN	0	11	12	0	IN	GPIO. 1	1	18
27	2	GPIO. 2	IN	0	13	14			0v		
22	3	GPIO. 3	IN	0	15	16	0	IN	GPIO. 4	4	23
		3.3v			17	18	1	OUT	GPIO. 5	5	24
10	12	MOSI	ALTO	0	19	20			0v		
9	13	MISO	ALTO	1	21	22	1	OUT	GPIO. 6	6	25
11	14	SCLK	ALTO	1	23	24	1	ALTO	CE0	10	8
		0v			25	26	1	ALTO	CE1	11	7
0	30	SDA.0	ALTO	1	27	28	1	ALTO	SCL.0	31	1
5	21	GPIO.21	IN	1	29	30			0v		
6	22	GPIO.22	IN	1	31	32	0	IN	GPIO.26	26	12
13	23	GPIO.23	IN	0	33	34			0v		
19	24	GPIO.24	IN	0	35	36	0	IN	GPIO.27	27	16
26	25	GPIO.25	IN	0	37	38	0	IN	GPIO.28	28	20
		0v			39	40	0	IN	GPIO.29	29	21

Experimental Procedure

Step 1: Connect the circuit as shown in the following diagram





Step 2: Edit and save the code with vim

```
#include <wiringPi.h>
#define ButtonPin 0
int LedPin[3] = {12,13,14};
int main (void)
{
  int x = 0;
  wiringPiSetup ();
  for (x = 0;x < 3;x ++)
  {
    pinMode (LedPin[x],OUTPUT);
  }
  pinMode (ButtonPin, INPUT);
  pullUpDnControl (ButtonPin, PUD_UP);
  while(1)
  {
    while(digitalRead (ButtonPin) == 0)
    {
      for(x = 0;x < 3;x ++)
      {
        digitalWrite (LedPin[x], HIGH) ;
      }
      delay (300) ;
      for(x = 0;x < 3;x ++)
      {
        digitalWrite (LedPin[x], LOW) ;
      }
      delay (300) ;
    }
    digitalWrite (LedPin[0], HIGH) ;
    delay (300);
    digitalWrite (LedPin[0], LOW) ;
    digitalWrite (LedPin[1], HIGH) ;
    delay (300);
    digitalWrite (LedPin[1], LOW) ;
    digitalWrite (LedPin[2], HIGH) ;
    delay (300);
    digitalWrite (LedPin[2], LOW) ;
  }
  return 0 ;
}
```

Step 3: Compile the code

```
gcc -o button button.c -lwiringPi
```

Step 4: Run the program

```
sudo ./button
```

Now, you can see your LEDs are flowing blinking. when you press the button,3 LEDs are blinking at the same time.

